ONTARIO MINISTRY OF ENVIRONMENT
36936000024441

1966 OPERATING SUMMARY

POINT EDWARD

water pollution control plant

TD
367
.A56
P65
1966
MOE

ONTARIO WATER RESOURCES COMMISSION

Division of Plant Operations

TD
367
.A56
P65
1966

Point Edward : water pollution
control plant.
81827

ONTARIO WATER RESOURCES COMMISSION
OFFICE OF THE GENERAL MANAGER

Members of the Point Edward Local Advisory Committee,
Village of Point Edward.

Gentlemen:

We are pleased to submit to you the 1966 Operating Summary for the Point Edward Water Pollution Control Plant, OWRC Project No. 59-S-36.

It is hoped that our joint participation in efforts to combat water pollution will have even more success in the coming year.

Yours very truly,

D. S. Caverly,
General Manager.

LIBRARY COPY
NOV 23 1967
ONTARIO WATER
RESOURCES COMMISSION

Digitized by the Internet Archive
in 2015

https://archive.org/details/pointedwardwater24441

ONTARIO WATER RESOURCES COMMISSION
801 BAY STREET
TORONTO 5

J. A. VANCE, LL.D.
CHAIRMAN
J. H. H. ROOT, M.P.P.
VICE-CHAIRMAN

D. S. CAVERLY
GENERAL MANAGER
W. S. MacDONNELL
COMMISSION SECRETARY

General Manager,
Ontario Water Resources Commission.

Dear Sir:

I am happy to present you with the 1966 Operating Summary for the Point Edward Water Pollution Control Plant, OWRC Project No. 59-S-36.

The report offers a concise summary of operating data for the year and comparisons with previous years where these are applicable and significant.

Yours very truly,

B C Palmer

B. C. Palmer, P. Eng.,
Director,
Division of Plant Operations.

FOREWORD

● This operating summary contains complete information on the management of the project during 1966. It contains a concise review of the year's plant operation, significant financial details, and a visual presentation in graphs and charts of technical performance.

The information will be of value to interested parties in assessing the adequacy of the project at this time and its ability to meet future requirements.

The report is the result of co-operation by several groups within the Division of Plant Operations. These include the statistics section and the technical publications section. The Division of Finance and the draughting section of the Division of Sanitary Engineering were also closely associated with its publication.

The Regional Operations Engineer, however, has had the primary responsibility for the content, and will be happy to answer any questions regarding it.

CONTENTS

Foreword 1
Title Page 3
'66 Review 5
Project Costs 6
Operating Costs 7
Process Data 9
Conclusions . . . . Inside back cover

POINT EDWARD

water pollution control plant

operated for

THE VILLAGE OF POINT EDWARD

by the

ONTARIO WATER RESOURCES COMMISSION

CHAIRMAN: Dr. James A. Vance

VICE-CHAIRMAN: J. H. H. Root, M.P.P.

COMMISSIONERS

W. D. Conklin, Q.C.
H. E. Brown
D. A. Moodie
L. E. Venchiarutti

GENERAL MANAGER: D. S. Caverly

ASSISTANT GENERAL MANAGERS

L. E. Owers
K. H. Sharpe
F. A. Voege
A. K. Watt

COMMISSION SECRETARY

W. S. MacDonnell

DIVISION OF PLANT OPERATIONS

DIRECTOR: B. C. Palmer

Assistant Director:	C. W. Perry
Regional Supervisor:	A. C. Beattie
Operations Engineer:	P. J. Osmond

801 Bay Street
Toronto 5

'66 REVIEW

During 1966, the Point Edward Water Pollution Control Plant provided primary treatment and chlorination only for a total of 75.918 million gallons of sewage. This was an increase of 5.7% over 1965. Average removal efficiencies of 37.5% BOD and 68.5% for Suspended Solids were achieved for the year.

The operating costs for 1966 decreased from the previous year by 3.5%. The cost per million gallons was reduced by 9.6% and the cost per lb. of BOD removed dropped by 8.7%.

Routine inspections of the buildings, grounds and mechanical and electrical equipment revealed no major deficiencies during 1966. A sudden failure of pump bearings necessitated emergency action towards the end of the year. A new priority system was introduced September 1 for maintenance of critical equipment. During the year, a new package pumping station was brought into operation. It is located near the entrance to the Blue Water Bridge.

The operator encountered some problems in his sewer cleaning program. New road construction or road repair resulted in covered-over manholes and debris in some sewers. The problem was resolved with the Town.

The Point Edward Water Pollution Control Plant is efficiently operated by Chief Operator Gordon Barwise. Assistance is provided on complex technical problems by OWRC head office technicians.

During 1966, casual help was used for weekend relief, holidays, and sickness.

Supervision at the plant is limited to 36 hours during the week days and a two-hour call-in period on each day of the weekend. High sewage levels in the wet well at the plant, indicative of either a power or equipment failure, are telemetered to the operator's house where an alarm has been installed.

Mr. Barwise attended the Chief Operators' conference in Toronto in October, 1966.

PROJECT COSTS

NET CAPITAL COST (Final) Long Term Debt to OWRC	$779,773.82
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1966	$ 97,954.00
Net Operating	$ 12,800.22
Debt Retirement	15,736.00
Reserve	4,497.66
Interest Charged	43,871.86
TOTAL	$ 76,905.74

RESERVE ACCOUNT

Balance at January 1, 1966	$ 26,479.38
Deposited by Municipality	4,497.66
Interest Earned	1,553.10
	$ 32,530.14
Less Expenditures	400.00
Balance at December 31, 1966	$ 32,130.14

MONTHLY OPERATING COSTS

MONTH	TOTAL EXPENDITURE	PAYROLL	CASUAL PAYROLL	FUEL	POWER	CHEMICAL	GENERAL SUPPLIES	EQUIPMENT	REPAIRS & MAINTENANCE	*SUNDRY	WATER
JAN	577.57	435.82	38.06		88.81					14.88	
FEB	829.56	426.74	46.28	178.68	92.73		43.65			41.48	
MARCH	1150.07	440.94	23.14	150.75	82.51	212.44	113.24	49.94	37.93	39.18	
APRIL	1243.00	668.51	56.96	134.79	93.48	214.51	3.87		6.89	51.11	12.88
MAY	782.79	440.94	32.04	124.34	83.20		29.86			72.41	
JUNE	1444.89	480.62	28.48	102.78	98.34	108.28	98.83			527.56	
JULY	853.96	435.82	103.60	67.53	99.52		39.59		6.99	90.55	10.36
AUG	1143.69	443.49	142.10	60.93	90.28	315.40			13.98	77.51	
SEPT	1356.08	649.19	94.50	52.56	89.23	207.11	42.16	174.89		46.44	
OCT	919.33	447.33	37.60	59.65	90.95		63.52	119.70		100.58	
NOV	1263.92	435.82	56.02	84.08	96.29	207.11	48.74	136.00	153.27	36.23	10.36
DEC	1235.36	431.06	40.75	98.56	87.76	197.25	112.35	61.06	13.52	181.97	11.08
TOTAL	12800.22	5736.28	699.53	1114.65	1093.10	1462.10	595.81	541.59	232.58	1279.90	44.68

* SUNDRY INCLUDES SLUDGE HAULING COSTS WHICH WERE $334.80

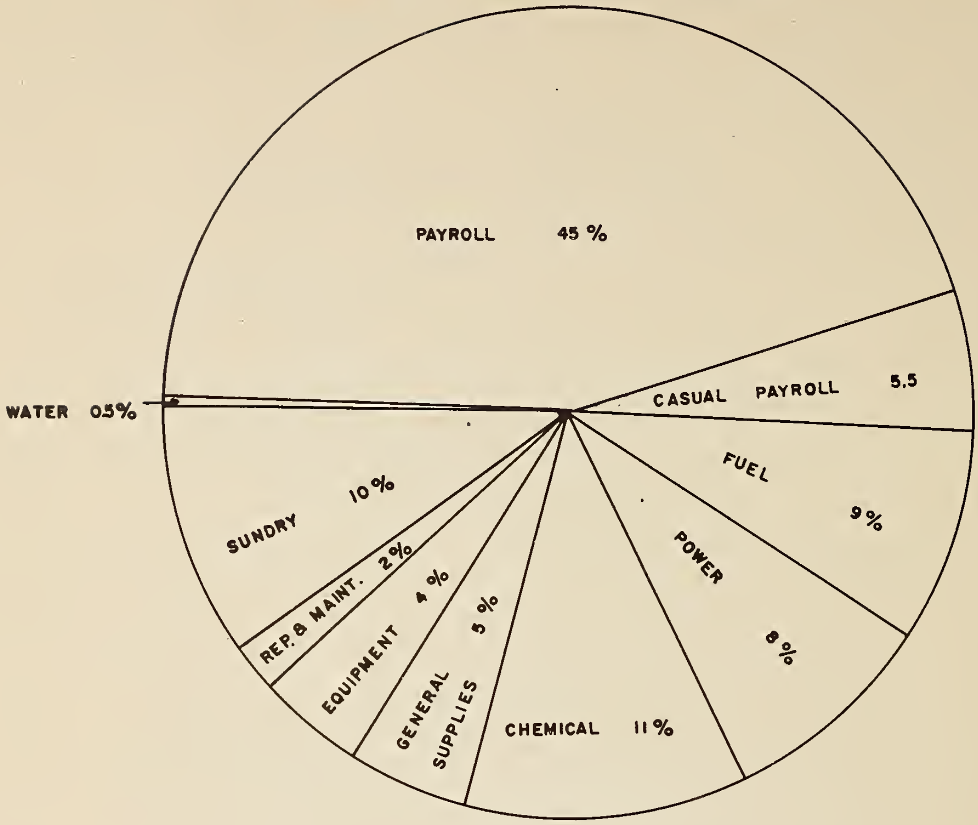
BRACKETS INDICATE CREDIT

YEARLY OPERATING COSTS

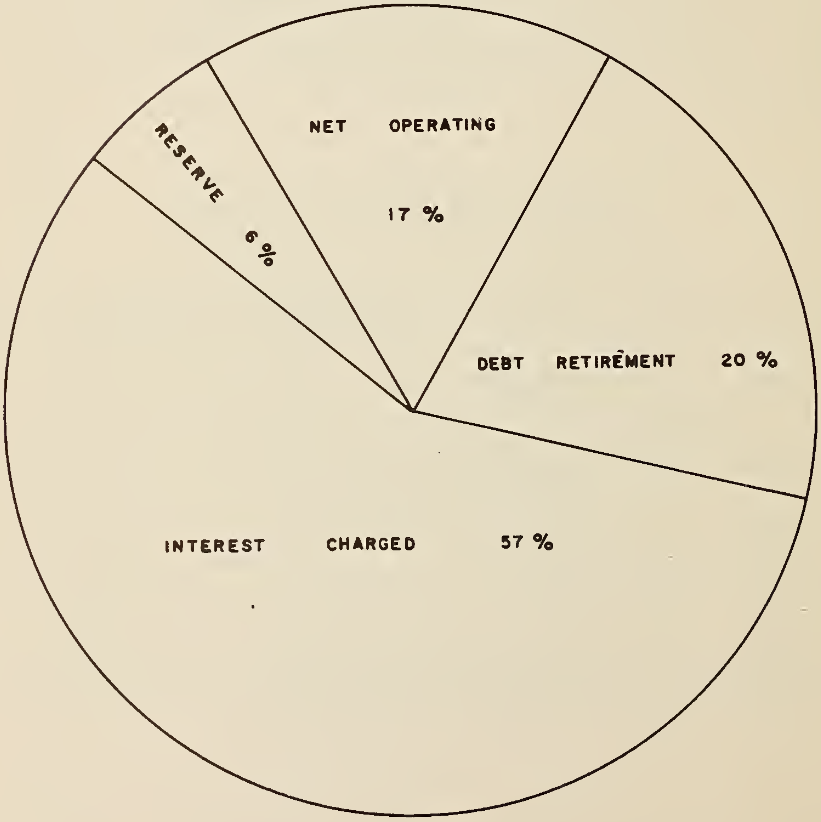
YEAR	M.G. TREATED	TOTAL COST	COST PER FAMILY PER YEAR	COST PER MILLION GALLONS	COST PER L.B. OF BOD REMOVED
1962	56.500	$ 9670.86	* $ 13.65	$ 171.17	$0.15
1963	64.907	$ 11343.38	$ 15.99	$ 174.26	$0.22
1964	66.626	$ 12451.09	$ 16.78	$ 186.88	$0.23
1965	71.180	$ 13272.64	$ 18.92	$ 184.83	$0.23
1966	75.918	$ 12800.22	$ 18.21	$ 168.61	$0.21

* BASED ON ANNUAL POPULATION ESTIMATE AND 3.9 PERSONS PER FAMILY

1966 OPERATING COSTS



TOTAL ANNUAL COST



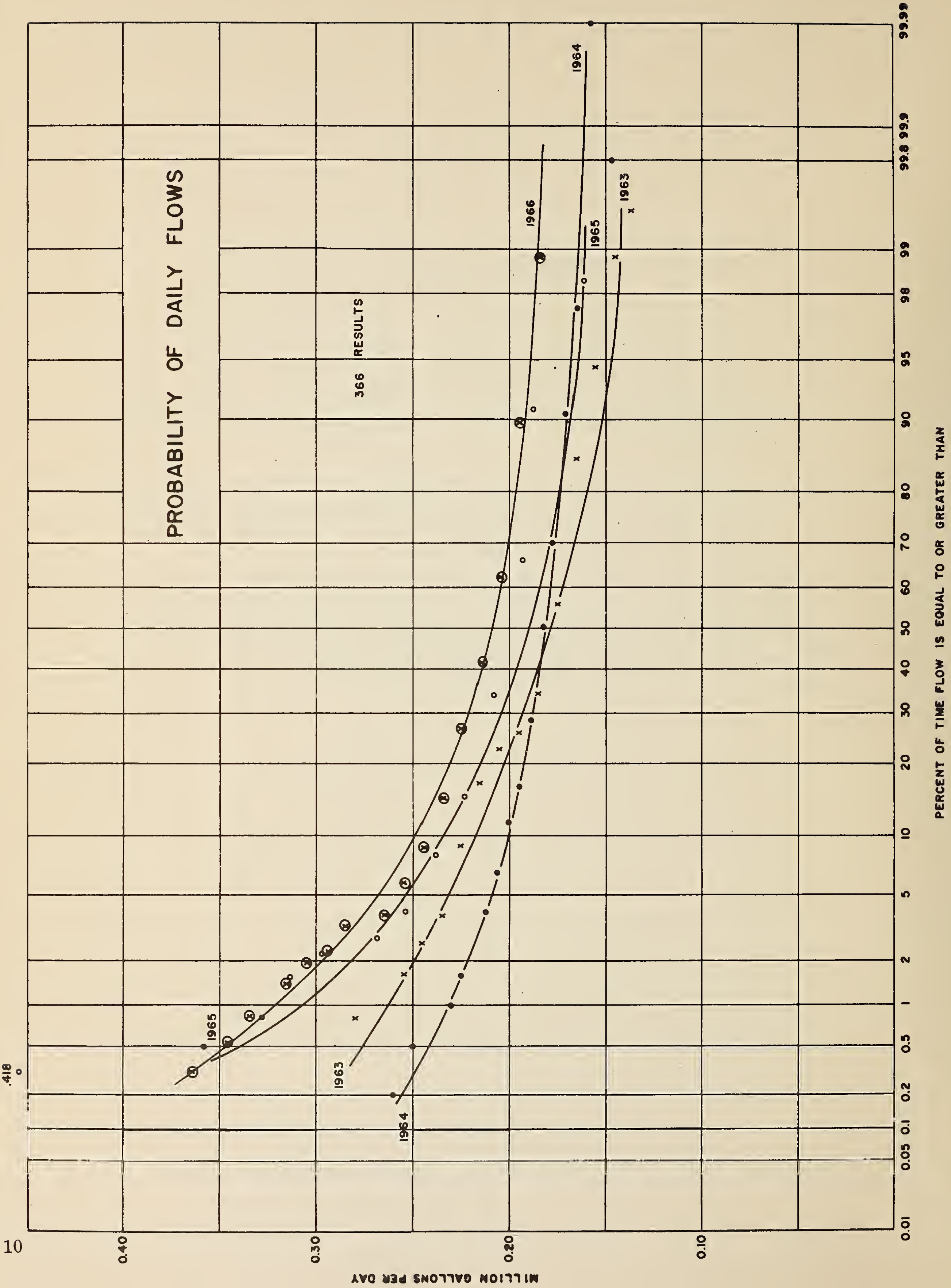
Process Data

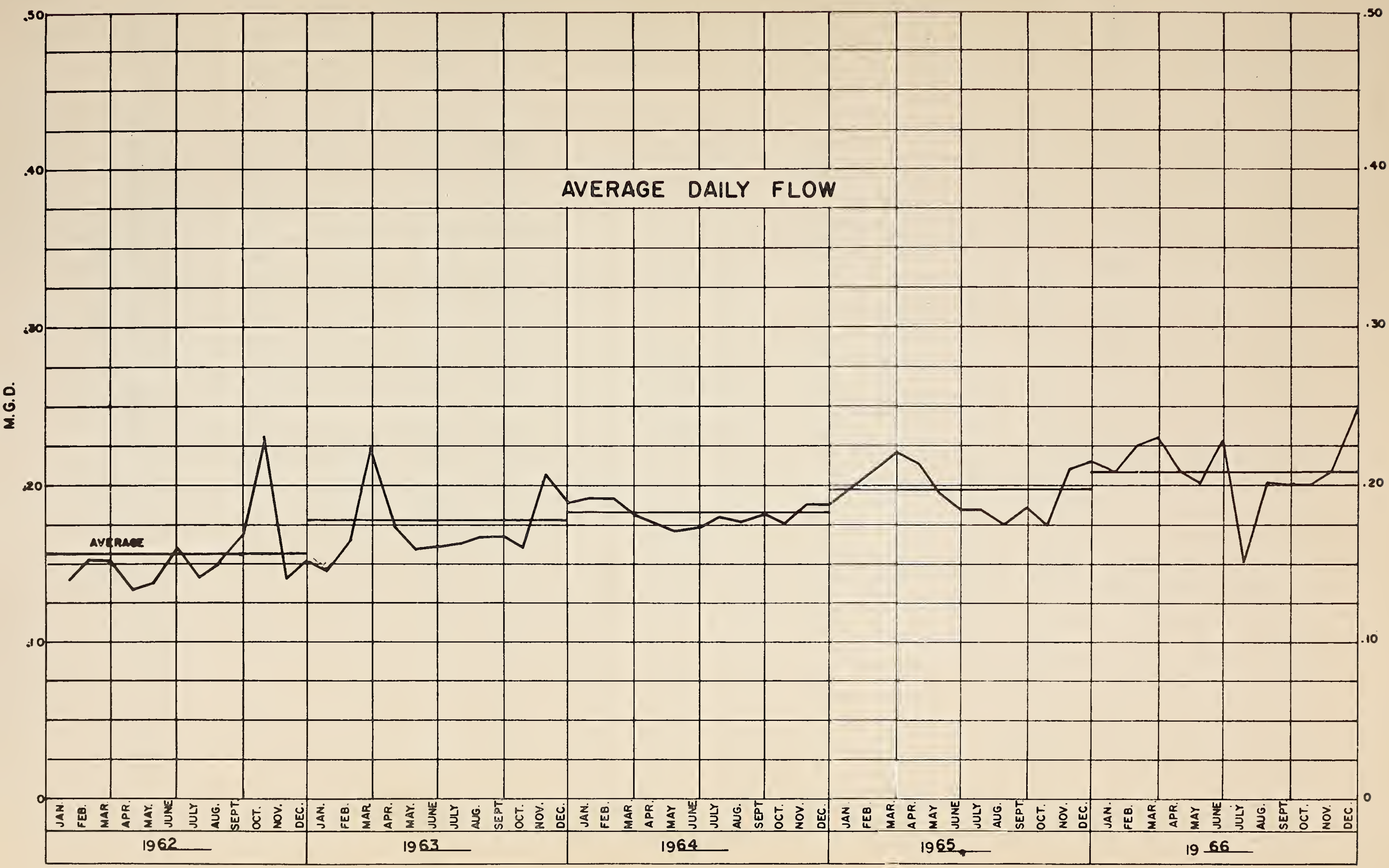
Flows

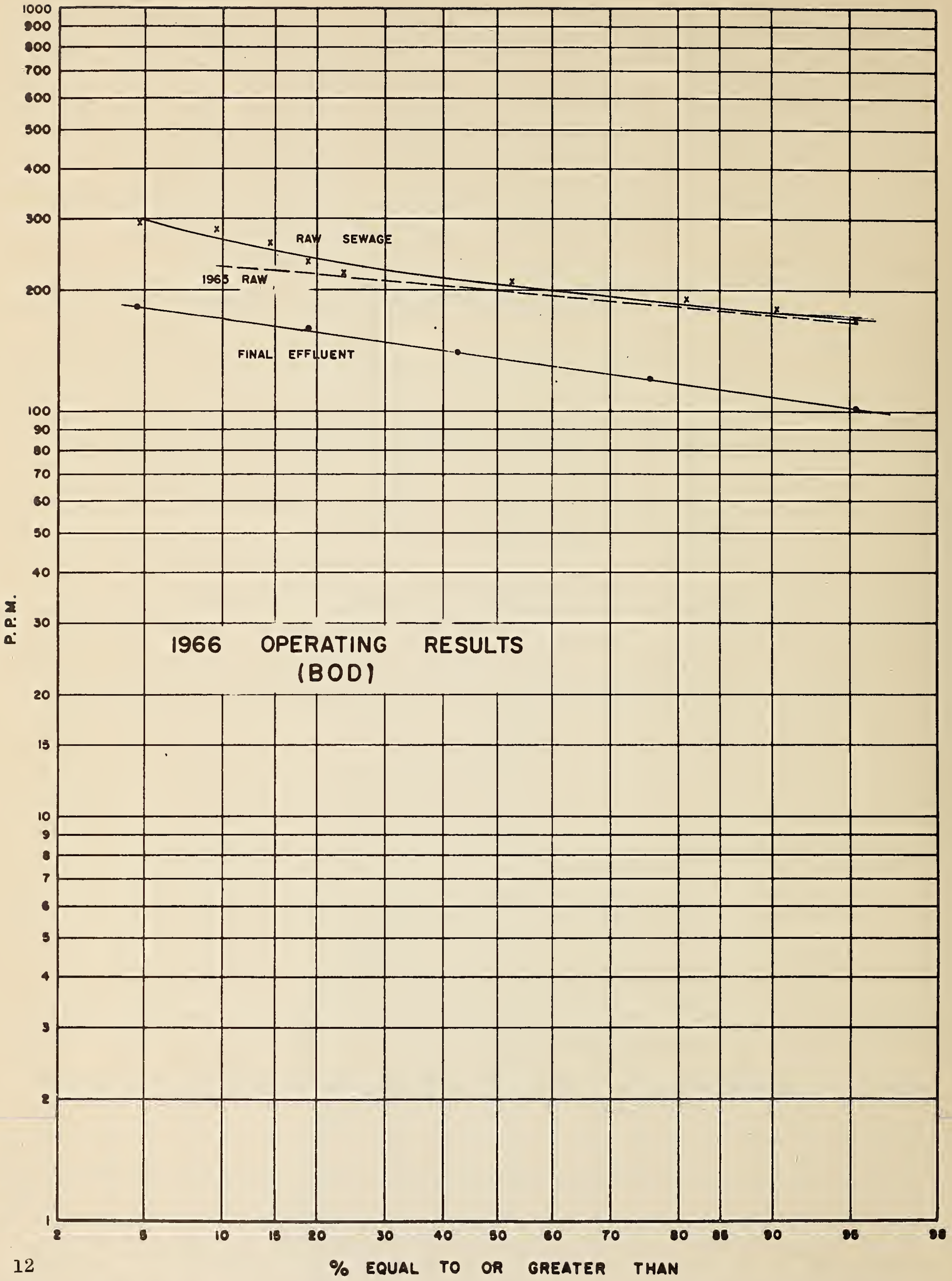
A total of 75.918 million gallons of sewage was given primary treatment during 1966. This is an increase of 5.7% over the 1965 total flow of 71.81 million gallons. The average daily flow for the year was 0.208 million gallons resulting in the plant being loaded hydraulically to 36.5% of its design capacity.

The maximum daily flow for the year occurred on December 10 when a total flow of 365,300 gallons was received at the plant. The minimum daily flow for the year 172,800 gallons, occurred on August 28. The greatest monthly flow occurred in December.

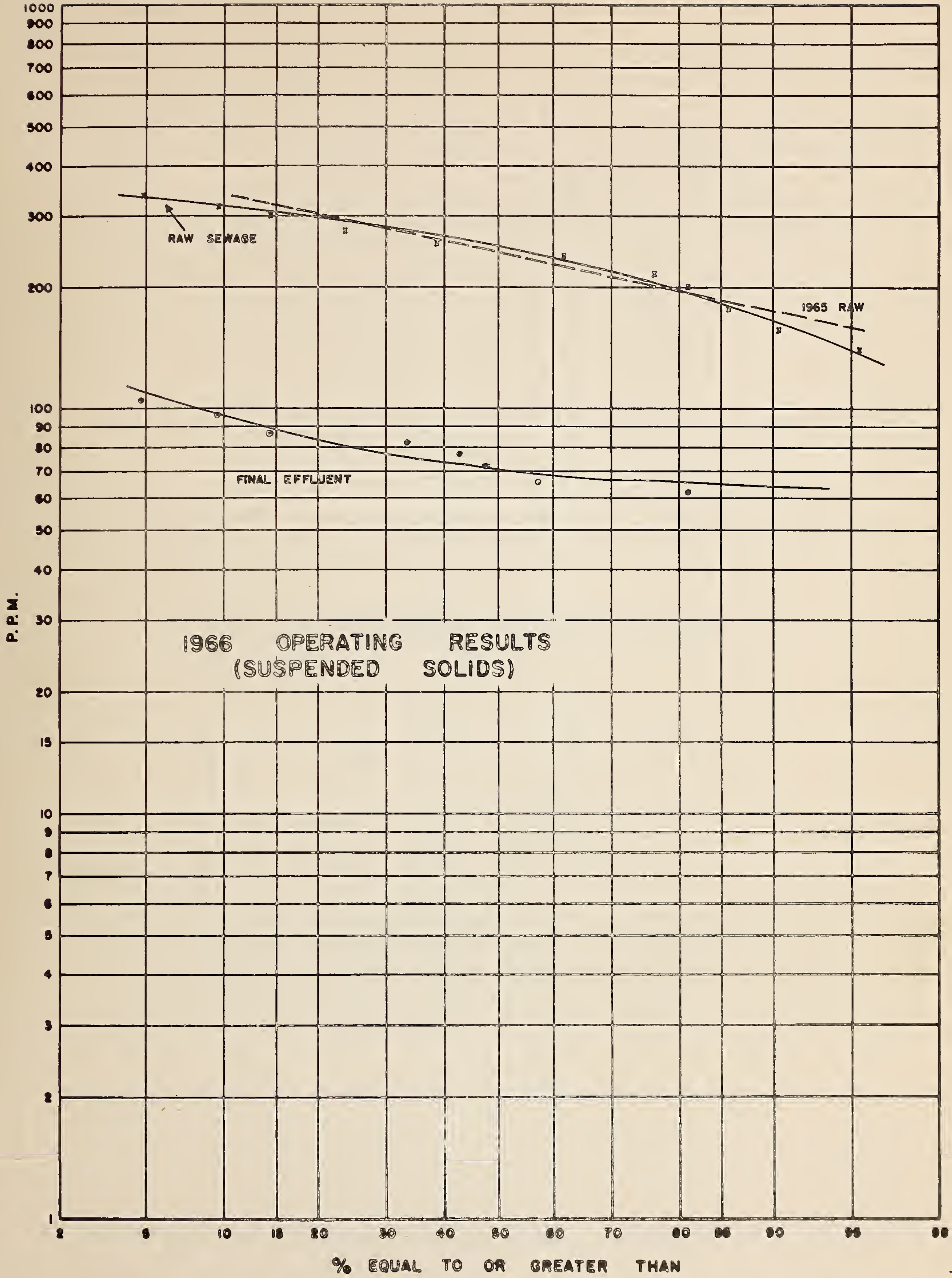
The average daily flow graph for five years of operation shows a gradual increase in flows. At the present rate, based on five-years' data, the plant will reach hydraulic capacity in about 35 years. During 1966, the maximum flow for one day was 64% of the design flow.


PROBABILITY OF DAILY FLOWS
366 RESULTS
1963
1964
1965
1966
.418
0.40
0.30
0.20
0.10
MILLION GALLONS PER DAY
0.01
0.05
0.1
0.2
0.5
1
2
5
10
20
30
40
50
60
70
80
90
95
98
99
99.8
99.9
99.99
PERCENT OF TIME FLOW IS EQUAL TO OR GREATER THAN

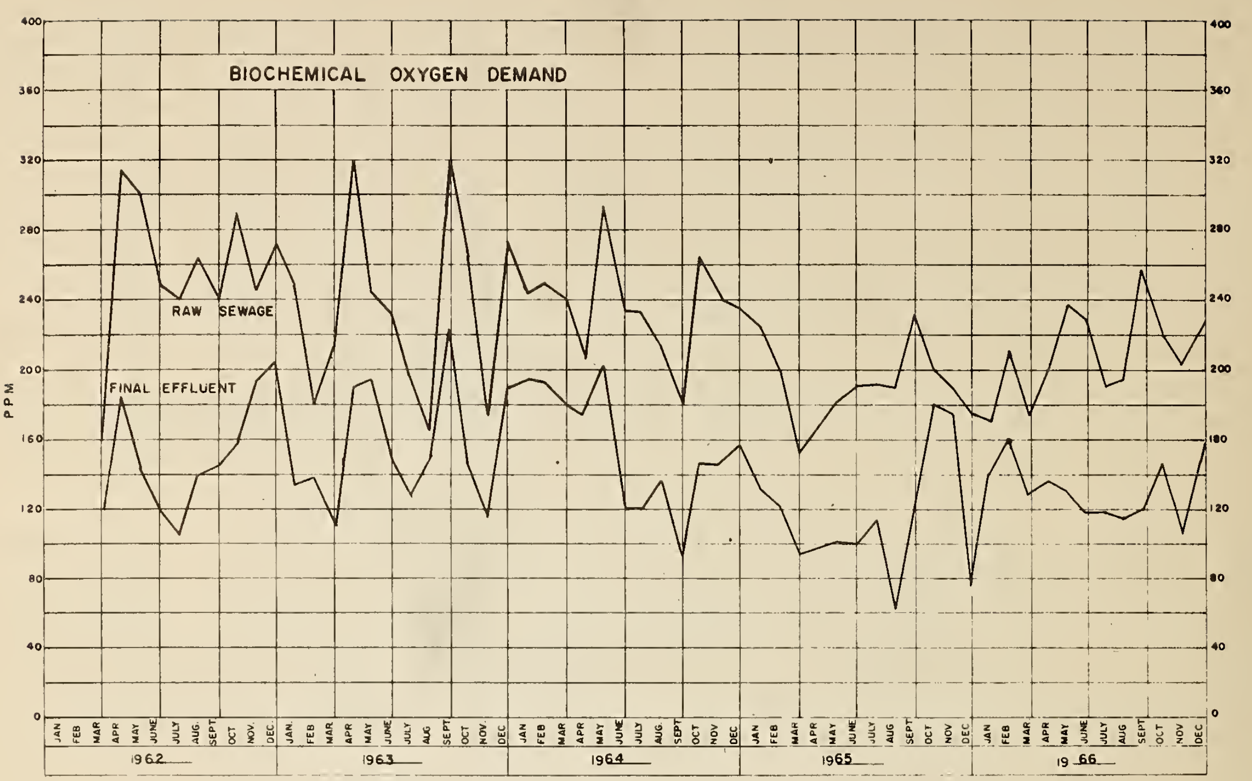

AVERAGE DAILY FLOW
M.G.D.
.50
.40
.30
.20
.10
0
AVERAGE
JAN.
FEB.
MAR.
APR.
MAY.
JUNE
JULY
AUG.
SEPT.
OCT.
NOV.
DEC.
1962
1963
1964
1965
1966



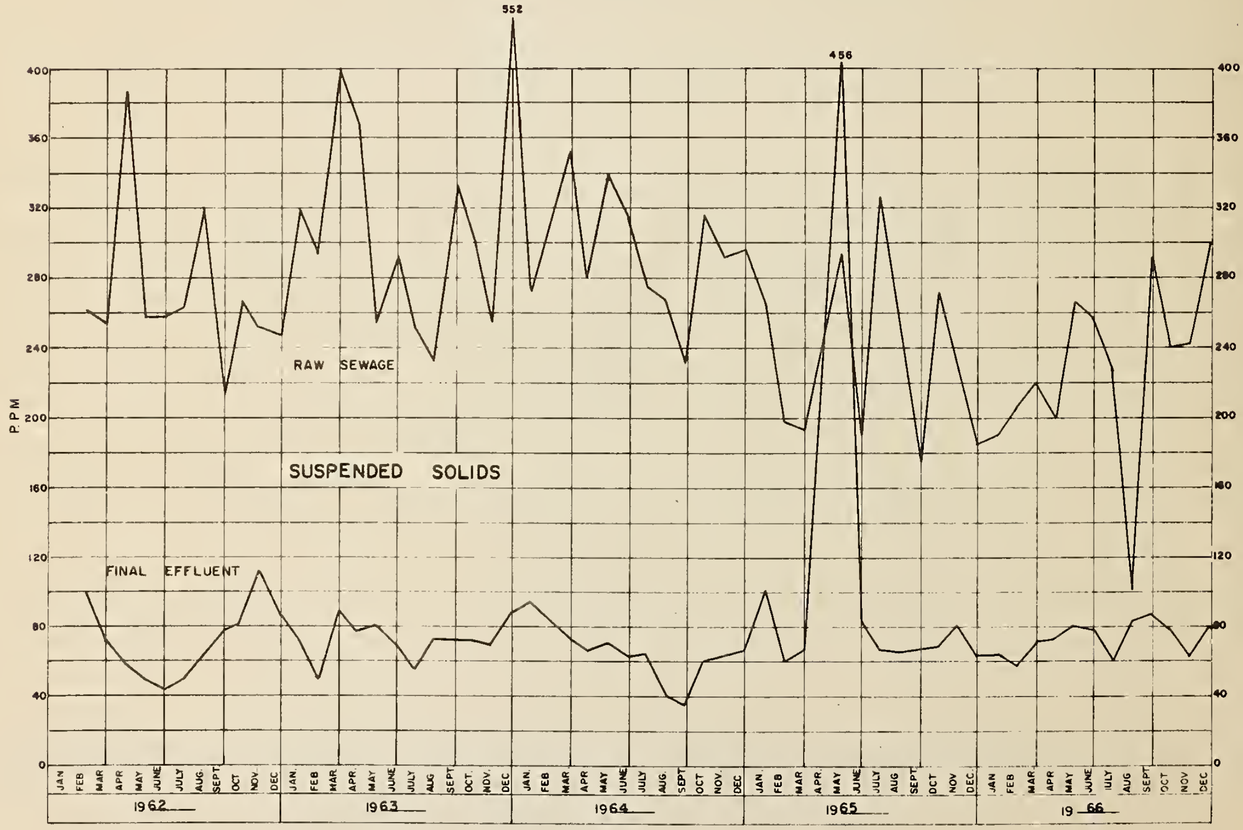
1966 OPERATING RESULTS (BOD)



1966 OPERATING RESULTS
(SUSPENDED SOLIDS)



MONTHLY VARIATIONS



GRIT, B.O.D AND S.S. REMOVAL

MONTH	B. O. D.				S. S.				GRIT REMOVAL CU. FT.
	INFLUENT P.P.M.	EFFLUENT P.P.M.	% REDUCTION	TONS REMOVED	INFLUENT P.P.M.	EFFLUENT P.P.M.	% REDUCTION	TONS REMOVED	
JAN.	170	140	17.5	1.0	190	64	66.5	4.1	27.7
FEB.	210	160	24.0	1.6	206	58	72.0	4.6	15.2
MAR.	175	128	27.0	1.7	219	70	68.0	5.3	8.0
APR.	198	136	31.5	1.9	198	72	63.5	4.0	11.3
MAY	238	130	45.4	3.3	267	80	70.0	5.8	10.8
JUNE	228	118	48.0	3.7	257	78	70.0	6.0	25.4
JULY	190	117	38.5	1.7	227	50	73.5	3.8	33.6
AUG.	195	115	41.0	2.5	98	82	16.5	0.5	7.6
SEPT.	257	119	53.5	4.2	290	87	70.0	6.1	9.8
OCT.	220	146	33.5	2.3	239	78	67.5	5.0	21.8
NOV.	202	105	48.0	3.0	241	62	74.5	5.6	25.6
DEC.	222	146	34.0	2.9	301	79	74.0	8.4	15.0
TOTAL	-	-	-	30.0	-	-	-	59.2	211.8
AVG.	209	130	37.5	2.5	228	72	68.5	4.9	17.6

COMMENTS

The raw sewage BOD averaged slightly higher in 1966 when compared to the 1965 value of 196 ppm; however, the suspended solids concentration dropped from 235 ppm in 1965 to 228 ppm in 1966. These results are based on twice monthly samples only. The plant provided an average reduction of 37.5% for BOD and 68.5% for SS. These results are comparable to the 1965 values. Removal of SS is higher than the 50% design value due to the low hydraulic load factor; however BOD removal approximates the design level.

Grit removal averaged 3.6 cubic feet per million gallons and is slightly higher than the average for OWRC plants.

DIGESTER OPERATION

MONTH	SLUDGE TO DIGESTERS			SLUDGE FROM DIGESTERS		
	1000'S CU FT	% SOLIDS	% VOL. MAT.	1000'S CU. FT	% SOLIDS	% VOL. MAT
JAN	4.22	1.92	1.53	0.48	5.99	3.61
FEB.	3.81	3.13	2.26	0.73	6.12	3.59
MAR.	4.22	2.44	1.81	0.73	7.82	4.40
APR.	4.09	2.32	1.74	0.48	9.04	5.96
MAY	4.22	3.32	2.62	0.73	5.16	2.95
JUNE	4.09	3.78	2.72	0.73	5.32	3.10
JULY	4.22	2.76	1.12	0.48	5.66	3.13
AUG.	4.21	5.40	4.29	0.73	5.57	0.39
SEPT.	4.47	3.76	3.00	0.73	5.40	4.32
OCT.	4.89	3.90	3.22	0.48	5.68	3.33
NOV.	4.46	2.62	1.88	0.73	4.76	2.80
DEC.	4.47	3.14	2.34	0.48	5.73	3.31
TOTAL	51.37	-	-	7.51	-	-
AVG.	4.28	3.21	2.38	0.63	6.02	3.41
1965 AVG.	3.77	3.44	2.49	0.65	5.48	3.61
1964 AVG.	3.55	2.70	2.13	0.56	5.33	3.19

COMMENTS

Again in 1966, there was an increase in the amount of raw sludge pumped to the digesters. This increase of 13.4% was greater than the flow increase of 5.7% and reflects a decrease in the concentration of raw sludge. The 7510 cubic feet of digested sludge removed is 14.6% of the total raw sludge. There was a total reduction of volatile matter during the year of 78.9%. The hauled sludge in 1966 averaged a higher concentration of solids than in 1965. Its volatile content was 56% of the solids. The methane produced from the digestion process was burned as a waste product. Digested sludge was hauled and disposed of at a cost of $1.20 per cubic yard.

CHLORINATION

MONTH	PLANT FLOW (MG)	POUNDS CHLORINE	DOSAGE RATE (P.P.M)
JANUARY	6.467	652	10.08
FEBRUARY	6.281	631	10.05
MARCH	7.065	719	10.18
APRIL	6.285	690	10.98
MAY	6.194	721	11.64
JUNE	6.765	747	11.04
JULY	4.614	758	16.43
AUGUST	6.242	831	13.31
SEPTEMBER	6.018	928	15.42
OCTOBER	6.207	920	14.82
NOVEMBER	6.212	787	12.67
DECEMBER	7.568	783	10.35
TOTAL	75.918	9167	-
AVERAGE	6.326	764	12.08

COMMENTS

Disinfection of the final effluent from the Point Edward plant is practiced 12 months of the year. During 1966, 9,167 pounds of chlorine was required at an average dosage of 12.08 ppm. This is almost the same as the 12.07 ppm dosage rate in 1965. The effluent is discharged to the St. Clair River approximately 1200 feet downstream from the City of Sarnia water intake.

CONCLUSIONS

The plant operated at 36.5% of capacity and has considerable reserve. It should not require expansion for a good many years. Since the plant is only a primary plant, it has never met the OWRC objectives in BOD and SS reduction of 15 ppm. There was a decrease in total cost of operation over 1965 to $168.61 per million gallons treated.

The plant is well maintained and operated and is achieving a satisfactory primary effluent.

RECOMMENDATIONS

The development of a marina, golf course and park in the immediate area downstream of the treatment plant make it desirable that consideration be given to providing secondary treatment at this plant.

ONTARIO WATER RESOURCES COMMISSION